



First report of the *Eucalyptus* gall wasp, *Ophelimus maskelli* (Hymenoptera: Eulophidae), an invasive pest on *Eucalyptus*, from the Western Hemisphere

ROGER A. BURKS¹, JASON L. MOTTERN, REBECCA WATERWORTH & TIMOTHY D. PAINE

Entomology Department, University of California, Riverside, Riverside, CA, USA 92521

¹Corresponding author. E-mail: burks.roger@gmail.com

Ophelimus maskelli (Ashmead) (Hymenoptera: Eulophidae) was found in southern California, USA, on March 17, 2014, in Riverside County, University of California Riverside Campus (UCR), and has been common there since then. It has also been found in other locations in southern California, including San Diego County (San Diego Safari Park on November 1, 2014), and Orange County (Laguna Niguel Regional Park). Specimens collected from UCR were compared with voucher specimens of *O. maskelli* collected from Lazio, Italy, and were found to be conspecific. This represents the first report of *O. maskelli* from the Western Hemisphere.

Ophelimus maskelli is a uniparental leaf-gall inducing invasive pest of several *Eucalyptus* species of the Exsertaria, Latoangulata, and Maidenaria sections (Protasov *et al.* 2007a).

Ashmead's (1900) description of *O. maskelli* from New Zealand is its only report from that country. Instead, *O. maskelli* has been observed on *Eucalyptus* in New South Wales, Australia (Protasov *et al.* 2007a), and therefore is probably native to Australia. Its morphology and taxonomic history were reviewed recently by Protasov *et al.* (2007a), and partial sequences of the cytochrome oxidase I mtDNA, 28S D2 rDNA, and 18S rDNA of Italian specimens were obtained as part of a review of the higher systematics of Eulophidae (Burks *et al.* 2011). Other species of leaf-gall inducing Eulophidae are known from California (Schauff & Garrison 2000; La Salle *et al.* 2009), all from the diverse and widespread subfamily Tetrastichinae. While subjectively similar to these species morphologically, *O. maskelli* (Fig. 2) is only distantly related to them, in the entirely gall-associated subfamily Ophelimiinae native to Australia, New Guinea, and New Zealand (Bouček, 1988). Morphological features distinguishing *O. maskelli* from gall-inducing Tetrastichinae include shape of the marginal vein and parastigma of its fore wing, the lack of submedian grooves on its mesoscutellum, and the presence of 4 anelli followed by a larger preclaval flagellomere in its antenna. It differs from most other species of *Ophelimus* Haliday in having only a single seta on its submarginal vein (Protasov *et al.* 2007a).

Ophelimus maskelli was first recorded as an exotic pest in 1999 in Italy, where it was misidentified as *Ophelimus eucalypti* (Gahan) (Arzone & Alma 2000). It has since been found in several other regions where *Eucalyptus* is grown, including the Mediterranean Basin, but also Indonesia, South Africa, and Vietnam (Mendel *et al.* 2004, 2005; EPPO 2006; Lawson *et al.* 2012). Although not reported previously from the Western Hemisphere, the constant spread of many other pests of *Eucalyptus* to California indicated that it might soon be found there (Paine *et al.* 2011). Uncontrolled populations of *O. maskelli* rapidly reached high densities in Israel (Mendel *et al.* 2007). They caused severe leaf damage and early leaf drop that resulted in almost complete defoliation of mature trees in some cases, and populations reached high enough densities to disrupt everyday human activities, even disrupting the harvest of other crops. *Eucalyptus camaldulensis* Dehnhardt and *Eucalyptus tereticornis* Smith are economically important species that are particularly susceptible to attack by *O. maskelli*, but other economically important species of *Eucalyptus* are susceptible to a lesser extent (Protasov *et al.* 2007a). Galls produced by *O. maskelli* are blister-like galls that can cover nearly all of a leaf's surface (Fig. 1).

The Australian uniparental parasitoid *Closterocerus chamaeleon* (Girault) (Eulophidae) has been used to effectively control *O. maskelli* in the Mediterranean Basin (Laudonia *et al.* 2006; Rizzo *et al.* 2006; Mendel *et al.* 2007; Protasov *et al.* 2007b; Caleca *et al.* 2011). Control programs in Israel included release of *Stethynium ophelimi* Huber (Mymaridae), another Australian parasitoid reared together with *C. chamaeleon*, but which was not recovered in large numbers in subsequent surveys (Mendel *et al.* 2007). *Closterocerus chamaeleon* has since exhibited strong potential for independent expansion to populations of *O. maskelli* in distant areas (Caleca 2010; Caleca *et al.* 2011). The known host range of *C. chamaeleon* is limited to *O. maskelli*, but it is possible that other leaf-gall inducers on *Eucalyptus* may serve as hosts as well (Protasov *et al.* 2007b).

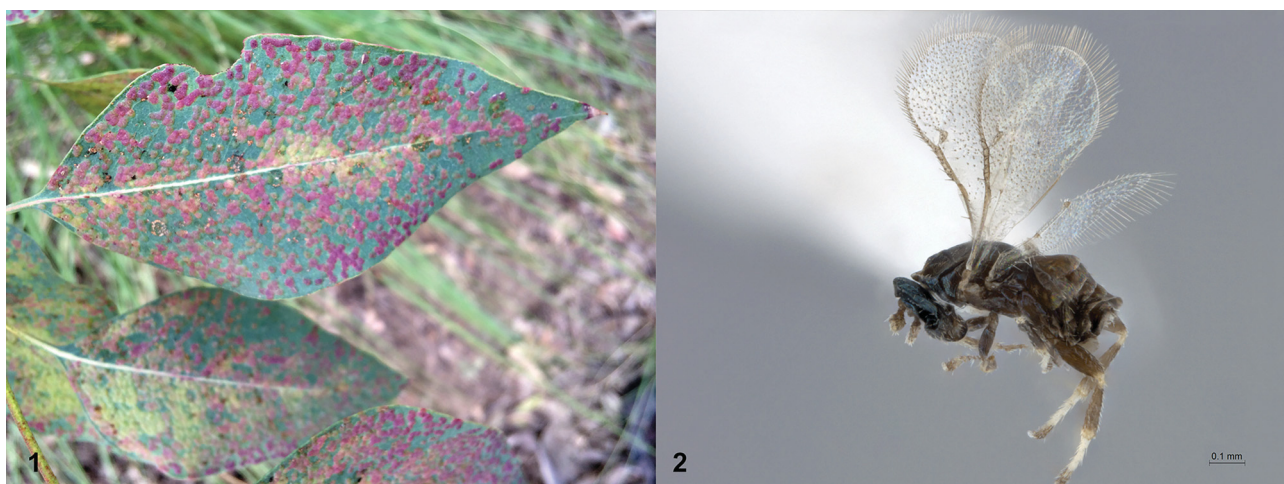


FIGURE 1. Galls of *Ophelimus maskelli* on leaves of *Eucalyptus* sp. from San Diego, CA.

FIGURE 2. *Ophelimus maskelli*, lateral view, specimen collected from Lazio, Italy (UCRCENT161366).

An unknown species of the eulophid subfamily Tetrastichinae was reared from *O. maskelli* galls collected from the UCR Campus but not from the other localities. Species identity and interaction with *O. maskelli* are currently unknown for this tetrastichine, but it may be the same species as unidentified tetrastichines found to be parasitoids of *O. maskelli* in Israel (Mendel *et al.*, 2007).

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